

NITRATE OF SILVER

J. HIGGINBOTTOM

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Wm G Bowen, Esq
with the author's kind regards
Nottingham Jan. 27 - 1872

ON THE NITRATE OF SILVER.



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NOTE.

For the successful application of the Nitrate of Silver, the ordinary brittle stick must be used, not “The Lunar Caustic points perfectly tough,” nor the crystals and cake used for Photographic purposes. Vide, British Medical Journal, for July 11th. 1863.

ON
THE NITRATE OF SILVER:

WITH FULL DIRECTIONS FOR ITS APPLICATION

IN THE TREATMENT OF

INFLAMMATION, WOUNDS, AND ULCERS,

WITH CASES.

BY

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TO
MARSHALL HALL, M.D., F.R.S.

FOREIGN ASSOCIATE OF THE ACADEMY OF MEDICINE, PARIS,

&c. &c.

THIS LITTLE WORK IS INSCRIBED,

WITH

SENTIMENTS OF GREAT AFFECTION AND ESTEEM,

BY HIS FRIEND AND RELATIVE,

THE AUTHOR.

NOTTINGHAM, 1850.

P R E F A C E.

MORE than a quarter of a century has elapsed since I published the first edition of my Essay on the Nitrate of Silver. During this interval I have employed this remedy daily, and I can conscientiously declare that its value has daily increased in my estimation, and that, unlike most remedies proposed by the ardent inquirer in medicine and surgery, it has borne the test of experience in other hands as well as my own. I could adduce a host of testimonials to this effect.

The power of the Nitrate of Silver in subduing the action of specific inflammation, as of variola, and of beneficially affecting parts subjacent to those involved in morbid action, as of the brain in erysipelas of the head, is of the most extraordinary kind.

The great obstacle to the general and free use of the Nitrate of Silver, even at the present day, appears to arise from the impression on the minds of many surgeons, that it is a caustic—a destructive agent.

The Nitrate of Silver is not a caustic in any sense of the word. It subdues inflammation, and induces resolution and the healing process—it preserves, and does not destroy, the part to which it is applied. If we compare a caustic, as the Hydrate of Potassa with the Nitrate of Silver, we find that the Hydrate of Potassa destroys, and induces a slough and the ulcerative process ; but if we touch a part with the Nitrate of Silver the eschar remains adherent for a time, and then falls off, leaving the subjacent parts healed.

If an ulcerated surface, secreting pus, be touched by the Nitrate of Silver, the purulent discharge is immediately converted into serum ; it is the property of the Hydrate of Potassa, on the contrary, to induce ulceration and suppuration. In short, the peculiar properties of the Nitrate of Silver have long been kept unknown to us by the designation of Lunar Caustic, affording the most striking instance of the influence of a term, or of a classification, upon the human mind. The Nitrate of Silver and the Hydrate of Potassa, (as indeed all caustics) are as the poles to each other—the first preserves, the second destroys—the first induces cicatrization, the second ulceration.

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DIRECTIONS

FOR USING

THE NITRATE OF SILVER.

AFTER so many years additional experience in the use of the nitrate of silver in the cure of inflammation, wounds, and ulcers, I am anxious to give still fuller directions for its use than before; for the proper mode of applying this remedy is quite essential to secure its good effect.

There is no form of acute superficial inflammation, arising from either constitutional or mechanical causes, in which the nitrate of silver may not be applied with great safety and advantage.

I have for some years past used the solution of the nitrate of silver, in the proportion of one scruple to one drachm of distilled water, as well as in the solid state, finding the concentrated solution more convenient for application when this is to be made over a considerable surface, as in erysipelas, &c. This solution may be applied with a small piece of sponge, attached to the eye end of a common silver probe, which may be kept in the pocket-case of instruments: it is not only useful for external use, but for application to internal parts of the throat, &c. Precaution should be taken to wash the sponge well with water after using it.

When the solid form of the nitrate of silver is used, it is necessary to moisten the surface to which it is to be applied slightly with pure water, and apply a long stick of the nitrate of silver *flat* upon the moistened surface, taking care that it be applied to every affected part.

It is necessary for the successful application of the nitrate of silver, that the surface of the skin be free from any oleaginous matter, loose cuticle, or any other extraneous substance. The parts should be well washed with soap and water, and

afterwards with water alone, to remove any particle of soap remaining.

It is very essential to know the precise effect of the nitrate of silver in the different degrees of its application.

If the nitrate of silver be passed *once slightly* over the moistened skin of any part, except the hands or soles of the feet (on which the cuticle is thicker than elsewhere) it induces an eschar, simply ; if it be passed over the surface *twice* or *thrice*, to the eschar will be added some vesication ; if more frequently still, there will be vesication only. In the first case there is no pain ; in the second and last there is soreness proportionate to the degree of vesication. Little vesication may be induced on the first day ; on the second day there is often more vesication ; on the third the vesication appears stationary, or rather on the decline, and the swelling of the part has a puffy feel when pressed upon with the finger ; on the fourth day the vesicles suddenly disappear.

If the vesicle be not previously broken, the eschared cuticle remains adherent until the new cuticle is formed, and is then cast off.

It is essential to the success of this plan of treatment, that these observations be kept constantly in view.

I shall now describe the mode of application of the nitrate of silver in the treatment of particular cases.

I. *Of recent Bruised Wounds of the Shin, &c.*

In recent bruised wounds of the shin, the nitrate of silver should be applied on the wound, taking care to leave no spot untouched, and upon the surrounding skin, to the breadth of one-third of an inch, *once*, that is, *in such a manner as to induce an eschar, without vesication*. Any moisture which may remain upon the wound is then to be removed by means of a little linen or lint, and the skin surrounding that on which the nitrate of silver was applied is to be moistened, and covered with gold-beater's skin, so that the whole may be protected from accident; the parts are then to be kept cool, free from covering, and freely exposed to the air.

This is usually all the treatment required in this kind of injury. It will be generally found

that an adherent eschar is formed, and that no further application or attention is required, excepting in old people, in whom the skin is sometimes irritable from various causes ; in this case, a little fluid will form under the edges of the eschar, and will require to be evacuated by a small puncture, the gold-beater's skin being slightly moistened and removed for this purpose, and then re-applied.

If the eschar be removed by accident at any time, the application of the nitrate of silver must be repeated as before. If due care be taken to avoid accident, it will not in general be found necessary to enjoin rest.

II. *Of small Ulcers.*

The same method of applying the nitrate of silver may be used in small ulcers as in the bruised wounds, particularly in exposed situations, as on the face, head, and hands. In these situations the eschar often becomes adherent on the first application, but should the first eschar be unadherent from fluid forming under it, a

poultice of bread and water should be applied, for eighteen or twenty-four hours, to remove the eschar, and when that is done, the case should be treated in the same manner as in large ulcers.

III. *Of recent large Ulcers.*

I have abandoned the attempt of healing large ulcers by the unadherent eschar, on account of the inconvenience and trouble attending the evacuation of the fluid from beneath the eschar, which is daily necessary to ensure an adherent eschar.

I now apply the nitrate of silver twice over the ulcer and surrounding skin. I then cover the ulcer with a piece of black lint,* and place upon it a plaster of neutral ointment,† spread

* BLACK LINT.—This is prepared in the following manner:—Two drachms of the nitrate of silver are to be dissolved in four ounces of distilled water; an ounce of fine lint is saturated with this solution, and then exposed in a flat shallow vessel to dry by evaporation.

† NEUTRAL OINTMENT.—Lead plaster, eight ounces; olive oil, eight ounces; prepared chalk, four ounces; distilled vinegar, eight ounces. The distilled vinegar and the chalk must be well mixed in a mortar, and the lead plaster and olive oil previously slowly melted together are to be added. The whole is then to be stirred together until cool.

rather thick on linen, and lastly a compress of linen, and a calico roller. This plan requires the attention of the surgeon only every third or fourth day.

The same remark may be here made in regard to ulcers as in regard to inflammation, and is of great practical importance respecting the action of the nitrate of silver, *viz.*, that its influence is exerted for three days in an active state, and declines on the fourth. On this account any intermediate applications are unnecessary. In small ulcers a second application of the nitrate of silver in substance is often unnecessary, the black lint absorbing the moisture, becoming firmly adherent, and remaining on the ulcer until it is healed. If the ulcer is not healed when the lint comes away, the application must be repeated every fourth day with black lint and the neutral ointment.

IV. *Old Ulcers of the Legs.*

Old ulcers of the legs have long been the opprobrium of surgery, and I recollect the following remark made in one of our periodical works soon

after the publication of my essay on the use of the nitrate of silver, that “old ulcers of the legs in 1830 would be old ulcers of the legs in 1840,” that no improvement would be made in the surgical treatment.

After the lapse of nearly twenty years, I am led to conclude that there has been a very manifest improvement in that department of surgery—not so much by the permanent cure of old ulcers of the legs by the use of the nitrate of silver as I anticipated, but by what is far better—their prevention, by the early use of that remedy.

I have no doubt that if the method given in these directions were attended to for subduing external inflammation by the use of the nitrate of silver, the treatment of bruised wounds and of small ulcers, with the occasional assistance of graduated pressure by bandages, or the elastic stocking, we should seldom have severe cases of old ulcers of the legs.

From my own observation and enquiry, I am led to believe that old ulcers of the legs have materially decreased in number in this locality, both in hospital and private practice.

V. Of Ulcers attended with Inflammation.

If ulcers attended with inflammation should occasion constitutional disorder, I would prescribe the patient an emetic of ipecacuanha, and a dose of the chloride of mercury, followed by an active saline purgative, apply a bread and water poultice every eight hours on the ulcer, and two or three folds of linen moistened with cold water constantly over the ulcer and inflamed surface, and enjoin the patient to keep in bed for twenty-four or thirty-six hours.

After this period, the treatment as directed for large ulcers, with the nitrate of silver, black lint, and neutral ointment, &c., may be generally pursued. Should there still be swelling or œdema arising from the ulcer, it will be necessary to enjoin absolute rest in bed, or under such circumstances the ulcer will not heal.

VI. Of Punctured Wounds, Bites, and Stings.

In recent punctured wounds the orifice must be first examined. If there be any extraneous body within it, or loose skin surrounding it, they

should be first removed. A drop of water should be put on the puncture, and the surrounding skin should be slightly moistened. The solid nitrate of silver is to be applied to the former, until some pain be experienced ; and over the latter lightly, so as not to induce vesication. It should be applied to the skin for an inch round the puncture, and to a greater extent, if the swelling exceeds that space. The part is then to be exposed to the air. In these cases, the eschar is generally adherent from the first application of the nitrate of silver ; but I have sometimes found the eschar to separate from the wound before it has quite healed, owing to its conical form ; it is then only necessary to repeat the application of the nitrate of silver slightly to complete the cure.

After a later period of punctured wounds, inflammation is usually present ; the punctured orifice is nearly closed by the swelling ; and a little pus, or fluid, has generally formed within. A slight pressure is to be applied to evacuate this fluid, a drop of water should be put on the orifice, and the nitrate of silver is then to be *well* applied within the puncture, and slightly upon,

and a little beyond the surrounding inflamed skin, and the parts are to be exposed to dry. In this manner an adherent eschar is formed, and the inflammation subsides. If there be any vesication it may be simply left to nature—the fluid is soon absorbed or evaporated.

If there be reason to suppose that an abscess has formed deeply, it must be opened freely with the lancet, and the nitrate of silver is then to be applied on the cavity and over the surrounding inflamed or swelled skin. A poultice of bread and water, and cold water as a lotion, are then to be applied over the whole. The application of the nitrate of silver may be repeated every second or third day, if the swelling or inflammation require it, and the cold poultice may be renewed every eight hours.

I have several times applied the nitrate of silver over an inflamed surface when I was not aware that suppuration had taken place. Even in these instances an immediate check is given to the surrounding inflammation, and relief to the pain, but in two or three days afterwards there has been an increase of swelling, attended by some pain, which is not usual, excepting when

there is matter, or some extraneous body underneath.

In these cases a free incision must be made with the lancet, and afterwards is to be applied the nitrate of silver and cold poultice.

In doubtful cases, where suppuration may be expected, it is advisable to apply a poultice after the application of the nitrate of silver, as the part may be in a fitter state to detect any fluctuation of matter than if a hard eschar be over it.

The bites of animals, and the stings of insects, are speedily cured by the nitrate of silver, applied as directed in punctured wounds.

VII. *Of Wounds received in Dissection.*

Previous to a post-mortem examination, as a precautionary measure, any sores or scratches on the fingers or hands should be treated by the nitrate of silver, applied to them so as to form an eschar.

After a post-mortem examination, we should wash the hands well in tepid water, then bathe them with salt and water, or vinegar, so that any small wound or abrasion may be detected by the

smarting pain occasioned ; this precaution is especially necessary after a post-mortem examination of abdominal inflammation, and of puerperal patients. Every suspicious spot should be then moistened with a little water, and the nitrate of silver should be freely applied on the affected parts, and over the surrounding skin, so as to form an eschar. I believe this plan will be a most effectual preventive of the dire effects of dissection wounds.

If the puncture be deep, suction should be used to the part ; then a drop of pure water should be put on the orifice of the puncture ; the nitrate of silver should then be well applied within the wound, and lightly over the surrounding skin.

In the second stage, when the wound becomes painful, or inflamed, and there is a tumour, or elevation of the skin, the small tumour should be removed with the lancet, or a crucial incision made through it, and the nitrate of silver should then be applied to the wound, and on and beyond the inflamed and swollen parts ; if on the following and subsequent days the inflammation spread, the application of the nitrate of silver

should be repeated ; an ipecacuanha emetic, followed by a purgative, being given.

In the third stage of rapidly spreading inflammation, severe constitutional symptoms are present, and the violent throbbing pain in the head; venæsection, ipecacuanha emetic, followed by an active purgative, two grains of calomel, with two grains of James's powder every three or four hours, till the mouth is affected, appear to be the best treatment. The nitrate of silver should be applied freely over all the inflamed surface, and along the inflamed absorbents.

VIII. *Of Lacerated Wounds.*

After the wound has been well washed, and all foreign matters removed, the nitrate of silver should be applied upon the irregular edges of the wound, but not within the wound, and on the surrounding skin ; afterwards, the parts should be brought into approximation by straps of adhesive plaister. Should the laceration be considerable, the interrupted suture may be used with the same success and safety as in an incised wound, but the suture must be applied *before* the

application of the nitrate of silver. The nitrate of silver should be applied on the edges of the wound, on the *line* of the wound, and on the surrounding skin ; the part should be supported by adhesive straps, without any other covering. The ligature may be removed about the third day, and the nitrate of silver should be applied to the small orifices left, to prevent any ulceration.

Great advantages are derived from healing wounds, particularly on the face, by the aid of the nitrate of silver.

1. It prevents the irritation arising from the irregular edges of a lacerated wound, adhesive inflammation takes place, and the wound is healed by the first intention, as in an incised wound.

2. The inflammation, swelling, and irritative fever, consequent on lacerated wounds, are in a great degree prevented, and there being no ulcerative process, there is no loss of substance, so that scars and raised cicatrices are prevented.

IX. *Hæmorrhage from Leech Bites.*

The point of a stick of the nitrate of silver should be firmly applied within the little orifice

for a short time, and then a small piece of black lint should be firmly pressed on the part with the finger for two or three minutes. In this manner the bleeding is effectually arrested. The black lint becomes firmly adherent, adhesive inflammation is produced, and the lint does not separate till the leech mark is healed.

X. *Of Incised Wounds.*

In incised wounds, the nitrate of silver should be applied slightly over the skin surrounding the wound, *not within the wound*, and the edges of the wound should be brought together with adhesive plaster, or the interrupted suture. In this way inflammation and swelling of the skin are prevented, and the wound heals by the first intention. This mode of treatment is very valuable after the operation for hare-lip, and in wounds on the face; adhesive inflammation being speedily produced by this treatment. When the ligatures are removed, the small orifices remaining should be touched with the nitrate of silver, to prevent ulceration.

XI. *Of Erysipelas.*

The value of the nitrate of silver in addition to the general treatment in severe cases of erysipelas has been proved by long experience. The mode of application is as follows:—The affected parts should be washed well with soap and water, then with water alone, to remove any particle of soap remaining, and then wiped dry with a soft cloth; the concentrated solution of the nitrate of silver is then to be applied two or three times over the whole inflamed surface, and *beyond it* on the surrounding healthy skin, to the extent of two or three inches. In about twelve hours it will be seen if the solution has been well applied. If any inflamed part be unaffected by it, it must be immediately re-applied to it. Sometimes even after the most decided application of the nitrate of silver, the inflammation may spread, but it is then generally much less severe, and it may be eventually checked by the repeated application of this remedy.

It is desirable to visit the patient every twelve hours until the inflammation is subdued.

By this means we have complete control over the disease. If the disease be attended by vesication, the vesicles should be broken, and the solution of the nitrate of silver applied on the denuded parts ; but if the vesicles arise from the use of the nitrate of silver, they may be allowed to remain undisturbed.

In erysipelas of the face, when it is spreading on the forehead, or at all on the scalp, the head should be shaved as early as possible, that the extent of inflammation may be traced on the scalp, which often can only be detected by pain, or by œdema being felt on pressure with the finger. The solution requires to be applied very freely all over the scalp, where it scarcely or never produces vesication.

When the inflammation has been subdued by an early use of the nitrate of silver, the constitutional symptoms are immediately relieved. They are aggravated by the least increase of local inflammation.

Even in idiopathic erysipelas, there is no period of the disease when the nitrate of silver may not be applied with advantage. I have never in any case seen metastasis or any other bad effect

from the use of this important remedy ; on the contrary, I think it is the best local application to prevent such an occurrence.

Different opinions have been formed with regard to the utility of the application of the nitrate of silver in erysipelas ; this has arisen from the imperfect, or improper mode of applying the remedy. Some have touched the inflammation with the point of the pencil of the nitrate of silver, almost fearing that it should come in contact with the disease, instead of applying the whole side of the stick, or the concentrated solution, which is much more convenient, over the inflamed and surrounding healthy skin. Others have applied it around the inflammation as a barrier, without applying it on the inflamed parts ; or, on the contrary, have applied it on the inflamed part, only, without using it on the healthy surrounding skin. Some apply a weak, insufficient solution, instead of the concentrated solution or the solid stick of the nitrate of silver ; and others again have applied it properly, but do not follow up the application if the inflammation should spread afterwards.

XII. *Of Phlegmonous Erysipelas.*

An early application of the solution of the nitrate of silver alone will be sometimes sufficient to check the progress of the inflammation.

If the inflammation be severe, attended with swelling, and the subcutaneous cellular tissue be much affected, a number of leeches should be applied immediately on the inflamed parts, or small incisions made with a lancet ; a bread and water poultice should be applied until the bleeding has ceased, and then the concentrated solution should be applied freely and beyond the inflamed parts.

If the leech-marks, or incisions, afterwards become painful or irritable, a slight application of the nitrate of silver should be made.

By the above method of treatment, the inflammation is arrested and subdued, the suppurative process is often prevented, and long incisions rendered unnecessary. Should the system be affected, ipecacuanha emetics, saline purgatives, and repeated doses of calomel with James's powder, will be proper.

XIII. *Of Inflammation of the Absorbents.*

Constitutional remedies are often required in inflammation of the absorbents—*viz.*, venesection, emetics, purgatives, &c., with an immediate attention to the origin of the disease. If this be a foreign substance, it should be removed—if an abscess, it must be freely opened—or if an irritable ulcer, the nitrate of silver should be applied to destroy the irritation.

The nitrate of silver should then be applied, either in substance or the concentrated solution, freely over the whole of the inflamed and swollen surface, along the lines of inflammation, and beyond them on the surrounding skin.

By this means in twenty-four hours the disease is generally most effectually arrested, and the numerous abscesses often occasioned by this kind of inflammation prevented.

XIV. *Of Phlegmonous Inflammation.*

Pure phlegmonous inflammation may be often arrested and subdued by the early application of

the nitrate of silver, without any other remedy; but if it has proceeded so far as to be doubtful whether suppuration has taken place or not, the inflammation will be arrested, and the suppuration rendered more circumscribed and limited in its extent.

If the tumefaction and inflammation are not subdued in four days after the application of the nitrate of silver, it will be found that suppuration has taken place, and that the use of the lancet will be required to open the abscess, after which the wound will more rapidly heal than if the nitrate of silver had not been used. The cold poultice may be applied every eight hours, and the nitrate of silver every second or third day, as required.

XV. *Of Small Irritable Ulcers with Varicose Veins.*

Small ulcers of the legs may be filled lightly with scrapings of black lint, and then covered with a plaster of neutral ointment, and graduated pressure applied with a bandage. It often happens that an adhesive eschar is formed after the

first application ; but if not, the remedy must be repeated every third or fourth day. A bandage or lace stocking should be continued.

XVI. *Of Burns or Scalds.*

In the first class of burns or scalds, where there is superficial inflammation, and in the second, where there is simply vesication without destruction of the cutis, the application of the nitrate of silver, as directed in erysipelas, often effects a speedy cure : the vesicles should be removed, and the nitrate of silver be applied on the exposed cutis to form an eschar. If future treatment be required, the black lint and neutral ointment may be applied every third or fourth day. Should the burn or scald be exposed to friction on any part of the body, a plaster of the neutral ointment applied with a light bandage over it will be necessary.

In burns from the explosion of gunpowder, particularly on the face, the mode of healing by eschar with the nitrate of silver is very successful.

XVII. *Of Gangræna Senilis.*

An early application of the nitrate of silver is indispensable to give a chance of checking the progress of this dreadful disease. It has been used with decided success when the toes have assumed a dark colour, and become a little swollen with purple vesications on the lower and outer part of the leg. The solid nitrate of silver may be applied (the affected parts being previously moistened with water) freely on the affected toes, and lightly on the surrounding healthy skin, and also on the denuded skin, after the vesicles have been removed, so as to form an eschar. If successful, the eschar becomes adherent, the inflammation is subdued, and all evil prevented. In due time the eschar will be thrown off, leaving the parts underneath healed.

It will be desirable to give purgatives, and adhere to an antiphlogistic regimen.

XVIII. *Of Variola.*

If the eruption be distinct, the solid stick of the nitrate of silver should be applied on each pustule, previously moistened with a little water. If confluent, the concentrated solution must be applied over the whole surface, as directed in erysipelas, and, if necessary, to the whole of the scalp, (the hair being previously removed) and to the ears, the neck, or any other part where it may be thought necessary. The application should be used on the second or third day of the eruption. If any parts should be untouched on the succeeding visit, it must be applied to those parts.

CASES ILLUSTRATIVE OF THE USE OF THE NITRATE OF SILVER.

ON account of the importance of this remedy, I have adduced a few examples of its application. A reference may be made to numerous cases in the second edition of my essay on the use of the nitrate of silver, in the cure of inflammation, wounds, and ulcers.

Erysipelas.

CASE 1.—On the 6th of August, 1844, I visited Miss B., 20 years of age, of very delicate constitution, and of a strumous diathesis. She had been exposed to the rain, and had neglected to change her clothes. She experienced the common symptoms attending a cold, accompanied by a slight erysipelatous inflammation of the right side of the cheek and nose. The constitutional symptoms were so slight, and the pulse so little accelerated, that I wished to avoid the application of the nitrate of silver, thinking the inflammation might be subdued by other remedies. I directed thirty grains of ipecacuanha as an emetic, and in three hours after its operation, two pills, containing three grains of chloride of mercury and eight

grains of the compound extract of colocynth, followed by a purgative of salts and senna, repeated every three hours until it operated freely.

7th. Early the following morning, although the emetic and purgative had operated satisfactorily, she was labouring under a severe attack of fever; the pulse was 140, and the erysipelas had spread considerably on her face and forehead, and slightly on her scalp. I opened a vein in the arm, and bled her in the semi-recumbent position to the amount of twelve ounces, when she became faint. Her head being shaved, the concentrated solution of the nitrate of silver was applied upon and beyond the whole of the inflamed surface, and also around the ears, to prevent them becoming inflamed. I applied it very freely over one half of the scalp, thinking this might be sufficient, as only a small portion of the forehead was affected. I prescribed two grains of the chloride of mercury, with two of James's powder, every six hours. There appeared no increase of the inflammation on the 8th, and the pulse was 120; the bowels had been well moved. On the 9th she had a restless feverish night, attended with slight delirium, the pulse being 120. There was no increase of erysipelas on the face, but it was spreading on the remaining part of the scalp. I applied the solution of the nitrate of silver over the

remaining part of the scalp. Neither of the ears was in the least affected. The solution of the nitrate of silver had apparently formed a barrier over which the erysipelas did not spread. On the 10th the patient was in every respect improving. From this time Miss B. recovered without interruption.

CASE 2.—I visited Miss. H, aged 30 years, on the evening of the 18th of December, 1843. She had been indisposed several weeks. There was considerable fever, a quick pulse, and pain of the head ; and she had a patch of erysipelas on the upper part of the nose, and a little across the lower part of the forehead. I prescribed an emetic of ipecacuanha, followed by a dose of chloride of mercury and compound extract of colocynth, and the sulphate of magnesia in infusion of senna.

On the morning of the 19th, the erysipelas had spread all over the face, and as high as the forehead, close to the scalp, and there was no abatement of the constitutional symptoms. I bled her whilst sitting up in bed, until she fainted, and directed the head to be shaved, and I then applied the solution of the nitrate of silver all over the face and one half of the scalp. In the evening I applied the solution of the nitrate of silver over the remaining part of the scalp :

having found that one ear had become inflamed, I applied the solution both upon it and around the other ear affected.

20th. The fever was considerably abated; the pulse was 100. From this day the patient was convalescent.

CASE 3.—I visited Miss C., aged 20 years, on the 14th of September, 1844. She had a sense of coldness and pain of the limbs the day before; she had then a slight degree of erysipelas on the left side of the nose, cheek, and upper lip. I directed an emetic and pill, with the compound colocynth extract and chloride of mercury, followed by an active dose of infusion of senna and sulphate of magnesia.

In the evening I found the erysipelas increased, and spreading towards the ear; the lower eye-lid was considerably swollen, but the erysipelas had not reached the forehead; pulse 100; no pain of the head. I applied the strong solution of the nitrate of silver all over the inflamed surface and the surrounding healthy skin for several inches, particularly round the ear. A grain and a half of chloride of mercury, with two grains of James's powder, was given every six hours, and a saline effervescing medicine every three hours.

16th. The application had been effectual, and there was no increase of the erysipelas; the pulse was 80.

CASE 4.—Mr. J. S., aged 30 years, had slight febrile symptoms on the 11th of December, 1843, which arose from exposure to cold. He had taken aperients and saline medicines. Two days afterwards there was a patch of erysipelatous inflammation on the right side of the face, without any considerable increase of fever. The nitrate of silver was well applied on the inflamed part, and on the surrounding skin. There was no further extension of the erysipelas.

It will be observed in the three last cases, when the nitrate of silver was promptly applied, before the erysipelas had produced severe constitutional symptoms, that the progress of the disease was instantly arrested, and that the patients speedily recovered. In the case of Miss H., although the erysipelas at first was suffered to proceed, the application of the nitrate of silver to the whole scalp prevented any cerebral affection, and the patient was convalescent in a short time. In the first case related there was restlessness and delirium fifteen hours after the application of the nitrate of silver; but it was observed that the scalp where the nitrate of silver had not been applied was inflamed, and on the decided application of the nitrate of silver on the whole of the scalp, the delirium ceased. From these cases, as well as from my experience of many years,

I have come to the conclusion that the speedy application of the nitrate of silver will arrest the progress of erysipelas, and prevent cerebral mischief. It is also of great practical importance to subdue erysipelatous inflammation in the commencement, for I have observed, when the attacks have been severe, that the patients afterwards became more subject to a recurrence of the disease.

The following case will shew the advantage of an early application of the nitrate of silver.

CASE 5.—Mrs. S., several years since, had a severe attack of erysipelas, which ran its usual course under medical treatment; the effects of the disease had been so severe as to confine her to her bed-room for six weeks.

In November, 1845, she had another attack of erysipelas on the face, which had progressed twenty-four hours before I saw her. A decided application of the nitrate of silver was made on the parts affected, and purgatives were given. She was convalescent in seven days.

The following year, in October, it made its appearance again on the face. She had taken a purgative before I saw her. One decided application of the nitrate of silver was sufficient to check the disease, and she was not confined a single day. No further remedies were required.

Only one case has occurred to me in erysipelas in which the nitrate of silver had no control over the inflammation ; this was in an elderly female labouring under typhus fever, and who suffered from cerebral symptoms before the erysipelas came on. From the failure of the nitrate of silver in this case I was led to think that the inflammation had its origin in the membranes of the brain, and spread from thence to the scalp. The patient was reduced to a state of the utmost debility, attended with involuntary evacuations and retention of urine, from which she ultimately recovered, but the nitrate of silver had not the least effect in retarding the progress or subduing the inflammation.

Lacerated Wounds.

LACERATED WOUNDS OF THE FACE.—CASE 1.—Miss R., aged 20. On a very windy day, a piece of slate was blown from the roof of a house, which fell upon her forehead and inflicted a wound of five inches in length, commencing on the forehead, above the right eye, passing obliquely across the nose, and terminating on the left cheek, leaving a large open wound, quite disfiguring the face. The wounded parts, after being well cleansed from extraneous matter,

were neatly closed by the interrupted suture ; the nitrate of silver was then applied along the edges of the wound, on the line of the wound, and also on the surrounding skin ; afterwards strips of adhesive plaster were applied, without any other covering.

The wound healed by the first intention, and required no further application. It is now several years since the accident. A common observer standing at a short distance, cannot see the mark of the union, for no disagreeable mark or cicatrix remains.

CASE 2.—A boy was standing on a wall, supporting himself against some iron palisades fixed in the wall ; not having a firm footing, his feet slipped ; he threw his head forward, and his cheek came in contact with a sharp iron spike at the top of one of the palisades ; it pierced through the lower part of the cheek, fractured the malar bone, and perforated the upper part of the cheek, so as to cause two lacerated wounds, two inches in length, one above the fractured bone and the other below.

After the parts had been washed, the wound was closed by two interrupted sutures ; the nitrate of silver was applied to the edges of the wound, to destroy their irritability, and an inch upon the surrounding skin ; also over the

surface of the small line of wound that was left exposed; but not within the wound. Adhesive strips were applied to support the part; no bandage was put over it.

In four days the wound had healed by the first intention, except a small opening in the lower wound. The ligatures were removed on the third day, and the slight orifices made by the removal of the ligatures were touched with the nitrate of silver, to prevent inflammation or ulceration.

It was observed that a clear fluid flowed from the small opening that remained in the lower wound, which was found to arise from a wound of the salivary duct.

After three applications of the nitrate of silver, to form an adherent eschar, this small opening was closed; and in three weeks there was no further discharge of saliva, the wound being healed.

The use of the nitrate of silver, in parotid fistula, I had previously practised, in a case of seventeen years' duration, published in the London and Physical Journal for January, 1830. In this case there were two orifices—one was healed by the nitrate of silver; the other with the concentrated sulphuric acid.

LACERATED PERINÆUM.—CASE 3.—Mrs. H., in her first labour, drew herself suddenly away from

any assistance at the moment of the expulsion of the head of the child, and, in consequence, the perinæum was lacerated just above the right side of the median line, entirely through the sphincter ani.

The parts were directly united by the interrupted suture in two places, and the nitrate of silver applied along the skin on each side, close to the line of the wound, and on the line of the wound, and left without any other dressing.

No swelling or inflammation followed to require any other treatment.

On the expiration of the second day, a dose of castor oil was given, which had the desired effect of opening the bowels without disturbing the parts.

On the third day, the sutures were removed, and the ligature marks touched with nitrate of silver, to prevent ulceration. The wound united by the first intention ; there was no swelling ; and it is worthy of observation, that the eschar surrounding the laceration, made by the nitrate of silver, had the power of fixing the parts as if adhesive plaster had been applied.

No further treatment was required ; and the patient experienced no further inconvenience. It is now thirteen years since this case occurred, and the patient has borne nine children, but there has been no other laceration.

On examining the part lately, the mark of the wound is scarcely perceptible, except that one point is a little raised at the anterior edge of the perinæum.

If another case should occur, I should use the catheter to draw off the urine for the first three or four days, although in this case no injury was sustained by its neglect.

*Nitrate of Silver in preventing the Pitting of
Small Pox, &c.*

Having observed, some years ago, that the nitrate of silver had been used on the Continent by MM. Velpeau, Bretonneau, and Serres, for the purpose of preventing pits and scars consequent on small pox, I was induced to apply it as they directed, by puncturing the centre of each vesicle with a needle, and then applying the solid stick of the nitrate of silver. I found it effectual in preventing any further progress of the pox.

The next patient on whom I used the nitrate of silver was a strong, healthy young man, about twenty years of age, with confluent small pox.

I punctured a few of the vesicles on the face, but these being very numerous, I satisfied myself with applying the *concentrated* solution over the whole surface of the face where they were most

confluent, without making any punctures. The solution answered as well as where the punctures had been made, in arresting the progress of the eruption.

The next case of confluent small pox was one where no punctures were made.

Mr. P., a young man of 19 years of age, and of delicate constitution. From the confluent state of the pox, I should have expected deep pits and scars on his face. I applied the concentrated solution on the whole of the face and the ears, in the same manner as recommended in erysipelas.

The vesicles of the pox were immediately arrested in their progress, and in four days presented small hardened eschars, free from inflammation, whilst the pustules on the body were gradually proceeding to suppuration. In about nine days the eschar had come away from the face without leaving pits.

In this case the nitrate of silver not only prevented the pits, but the inflammation and irritation, and offensive suppuration, which are so distressing to the patient.

If thought necessary, the nitrate of silver might be applied all over the scalp, as in erysipelas, to prevent cerebral inflammation.

It might be applied on and within the cavity of the ear, to prevent otitis ; and on the conjunctiva, to prevent ophthalmia.

I have used as a gargle to the throat, in small pox, with great benefit, a solution of a scruple of the nitrate of silver in three ounces of distilled water.

It appears, from the "Lancet" of January 28, 1843, that MM. Velpeau, Bretonneau, and Serres, used the solution of the nitrate of silver over the whole surface of the small pox, "but it was found that, employed in this manner, the salt was utterly useless ; that it masked the progress of the eruption from sight, without impeding its development."

The failure must have arisen from using *too weak a solution*.

Gangræna Senilis.

A retired tradesman, 73 years of age, of a full habit, was attacked with gangræna senilis. Before my attention was directed to the disease, the third and fourth toes had assumed a dark colour, and become a little swelled; and two small purple vesications had appeared on the lower and outer part of the leg. The disease appeared to have existed for several days ; and, from its progress, I feared the result would be unfavourable. I determined to try the effect of the nitrate of silver. I used it in the solid form. The parts

being previously moistened with water, I applied it freely on the affected toes, and over the surrounding healthy skin ; and having removed the little vesications on the leg, I touched the denuded surfaces, so as to form eschars.

The eschars became adherent ; the inflammation was subdued, and all further mischief prevented. In due time the eschars were thrown off, leaving the parts underneath healthy.

No constitutional remedies were employed.

The patient lived three years afterwards ; he had no return of the complaint, and died ultimately of old age.

The external application of the nitrate of silver to the surface of the skin appears to have a very extraordinary influence on the subjacent vessels, changing an unhealthy action into a healthy one. What is very remarkable is, that after one decided application of it upon the skin, its action appears progressive, and is completed in four days.

From the success of the nitrate of silver in checking the progress of gangræna senilis in the above case, I am led to conclude that the disease is in the commencement, in some cases, confined to the capillaries. The nitrate of silver could scarcely have such an effect if it had a deeper seat. Ossification, or inflammation of the arteries, may be the cause of gangræna senilis in certain

cases ; and in these the nitrate of silver will not, of course, be expected to effect so ready a cure.

The following case, which I received some years since, in a communication from John Leigh, Esq., surgeon, of St. Ives, still further corroborates my views.

“ A man of 79 years of age, with mortification of the little toe, whom I a year ago should have treated after the orthodox fashion, with opium for the excessive fits of pain, bark, stimulating poultices, &c., and I firmly believe, lost him, as a few months before I lost one.

“ With this man I commenced with the application of the nitrate of silver, and administered daily purgatives. The old man is now well. He did not take a grain of opium. I not only applied the nitrate of silver to the mortified part, but on the surrounding skin, as you direct, and in a day or two all inflammation had left him.”



